CLAIMS

What is claimed is:

1. A method for deblocking and transcoding a media stream, said method comprising:

receiving a coefficient associated with a block of pixels of said media stream;

performing a deblocking operation on said coefficient to generate a second coefficient; and

performing quantization on said second coefficient to generate a transcoded coefficient.

2. The method as recited in Claim 1 wherein said coefficient is a quantized coefficient.

3. The method as recited in Claim 2 wherein said receiving said coefficient comprises:

receiving said quantized coefficient from a pre-encoded bit stream;

performing inverse quantization on said quantized coefficient to generate a first dequantized coefficient, said inverse quantization having a first step size.

4. The method as recited in Claim 3 wherein said quantization has a second step size, wherein said second step size is greater than said first step size.

5. The method as recited in Claim 2 wherein said quantized coefficient is a discrete cosine transform (DCT) coefficient.

6. The method as recited in Claim 4 wherein said performing said deblocking operation comprises:

determining whether said first dequantized coefficient is responsive;

if said first dequantized coefficient is responsive, deblocking said first dequantized coefficient such that said second coefficient is a deblocked coefficient; and

if said first dequantized coefficient is not responsive, said second coefficient is said first dequantized coefficient.

7. The method as recited in Claim 6 wherein said determining whether said first dequantized coefficient is responsive comprises:

accessing a table based on said first step size, said table comprising a distribution of at least one responsive coefficient based on said second step size; and

determining whether said first dequantized coefficient at said second step size is responsive.

8. The method as recited in Claim 4 further comprising determining an optimal value for said second step size based on quantization error for said quantized coefficient.

9. A deblocking-capable transcoder comprising:

an inverse quantizer for receiving a quantized coefficient associated with a block of pixels of said media stream and performing an inverse quantization operation on said quantized coefficient to generate a first dequantized coefficient, said inverse quantization having a first step size;

a deblocking mechanism for performing a deblocking operation on said dequantized coefficient to generate a second coefficient; and

a transcoder for performing quantization on said second coefficient to generate a transcoded coefficient.

10. The deblocking-capable transcoder as recited in Claim 9 wherein said quantization has a second step size, wherein said second step size is greater than said first step size.

11. The deblocking-capable transcoder as recited in Claim 9 wherein said quantized coefficient is a discrete cosine transform (DCT) coefficient.

12. The deblocking-capable transcoder as recited in Claim 10 further comprising a responsiveness selector for determining whether said first dequantized coefficient is responsive and if said first dequantized coefficient is responsive, forwarding said first dequantized coefficient to said deblocking mechanism.

13. The deblocking-capable transcoder as recited in Claim 12 wherein said responsiveness selector is operable to determine whether said first dequantized coefficient is responsive by accessing a coefficient responsiveness table.

14. A method for determining responsiveness of a coefficient of a media stream, said method comprising:

receiving a plurality of first coefficients and a plurality of second coefficients associated with plurality of blocks of pixels of said media stream, a first quantization step size, a second quantization step size, and a quantization operation;

performing said quantization operation for a first coefficient of said plurality of first coefficients and a second coefficient of said plurality of second coefficients, said quantization operation based on said first quantization step size and said second quantization step size; and

determining whether said first coefficient is responsive based on said quantization operation.

15. The method as recited in Claim 14 wherein said quantization operation is a uniform scalar quantizer with rounding to nearest.

16. The method as recited in Claim 14 wherein said quantization operation is a uniform scalar quantizer with rounding down.

17. The method as recited in Claim 14 wherein said determining whether said first coefficient is responsive based on said quantization operation comprises:

determining a lower bound based on said quantization operation;

determining an upper bound based on said quantization operation; and

provided said lower bound is less than said first coefficient and said upper bound is greater than said first coefficient, indicating said first coefficient as responsive for said first quantization step size and said second quantization step size.

18. The method as recited in Claim 14 further comprising repeating said performing and said determining for said plurality of first coefficients.

19. The method as recited in Claim 18 further comprising generating a coefficient responsiveness table comprising a distribution of responsiveness of said plurality of first coefficients for said first quantization step size, wherein a first axis corresponds to said plurality of first coefficients and said second axis corresponds to said second quantization step size.

20. The method as recited in Claim 14 wherein said plurality of first coefficients are quantized coefficients and said plurality of second coefficients are transcoded coefficients.

21. A method for determining an optimal quantization step size, said method comprising:

receiving an input quantization step size and a plurality of coefficients of a macroblock;

determining a magnitude distribution of non-zero coefficients of said plurality of coefficients;

determining a plurality of candidate quantization step sizes based on a first table; and

determining said optimal quantization step size from said plurality of quantization step sizes based on a second table.

22. The method as recited in Claim 21 wherein said first table is a quantization error table.

23. The method as recited in Claim 21 wherein said second table is a coefficient responsiveness table.

24. The method as recited in Claim 21 wherein said determining said plurality of candidate quantization step sizes comprises:

determining a quantization error for a range of quantization step sizes including said input quantization step size; and

selecting a plurality of candidate quantization step sizes from said range of quantization step sizes wherein said plurality of candidate quantization step sizes produce a quantization error not greater than quantization error associated with said input quantization step size.

25. The method as recited in Claim 24 wherein said range of quantization step sizes comprises all quantization step sizes between said input quantization step size plus three and said input quantization step size minus three.

26. The method as recited in Claim 21 wherein said determining said optimal quantization step size comprises selecting said optimal quantization step size as a quantization step size from said plurality of quantization step sizes that having the highest number of responsive coefficients.